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| 21839 | 7590 | 11/19/2004 | EXAMINER | |
| BURNS DOANE SWECKER & MATHIS L L P | | | STONE, JENNIFER A | |
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DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. **6**

10/619,561

Applicant(s)

PECK ET AL.

Examiner

Jennifer A Stone

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-38 is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 18 and 20-25 is/are rejected.
- 7) ☒ Claim(s) 14, 16, 17, 19 and 26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date Dec. 10, 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 11, 12, and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Datta (U.S. 5,552,998).

For claim 1, Datta discloses a method for monitoring the condition of a material, comprising: determining a reference baseline for at least one characteristic of a material (col 1, Ins 17-20; col 3, Ins 55-63); monitoring at least one characteristic of the material across time and/or temperature (col 4, Ins 21-23 and 24-34); comparing the monitored characteristic against the reference baseline; and initiating a signal when the difference between the monitored characteristic and the reference baseline exceeds a predetermined value (col 4, Ins 33-37).

For claim 2, the material is formed into a heating element (col 2, Ins 3-6).

For claim 3, the reference baseline is a geometric model (such as an algorithm comparison – Applicant's specification pg 24, ln 12) – (col 2, Ins 33-39).

For claim 4, Datta discloses at least one characteristic is representative of the condition of the material (col 2, Ins 31-35).

For claim 5, the characteristic is the electrical resistance of the material (col 4, Ins 9-14).

For claim 6, the characteristic is a voltage value (col 4, Ins 9-11 and 39-41).

For claim 7, the characteristic is a current value (col 4, Ins 9-11 and 39-42).

For claim 8, the characteristic is a temperature value (col 3, Ins 53-58).

For claim 9, Datta discloses the monitoring performed over a predetermined range (col 4, Ins 9-18).

For claim 11, the monitoring is performed without shutting down the chamber in which the material is located (col 4, Ins 41-45).

For claim 12, the claim is interpreted and rejected for the same reasons as stated in the rejection of claim 5 as stated above.

For claim 21, Datta discloses a signal initiated when the difference reaches a predetermined value (col 4, Ins 35-41).

For claim 22, the initiated signal is sent to a decision-making authority (col 3, Ins 33-41). The decision-making authority is the processor or computer (Fig. 2, items 13 and 16).

For claim 23, Datta discloses monitoring a material based on a sudden change in a monitored characteristic (col 1, Ins 17-20 and 37-43). It is well known that monitoring a material characteristic detects degradation or failure of the material based on a sudden change of the characteristic.

3. Claims 24 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshimura (U.S. 4,891,497).

For claim 24, Yoshimura discloses a method for monitoring the condition of a heating element (col 1, Ins 6-10), comprising determining a first graphical representation

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of a characteristic of a heating element as a reference baseline (col 3, Ins 1-5; Fig 1, item 6); setting a threshold level of graphical change for the characteristic (col 4, Ins 57-68; Fig. 4); collecting data reflecting the condition of the characteristic of the heating element material after an interval (resistance vs. temperature after a period of time); concerting the collected data to a second graphical representation (Fig. 4); comparing the difference between the first and second graphical representations against the threshold level of graphical change (Fig. 4 – measuring error); and sensing a signal to a decision making authority when the difference reaches or exceeds the threshold level (col 4, Ins 18-25).

For claim 27, Yoshimura discloses the collected data comprises the resistance measurements of the heating element (Fig. 4 – Resistance).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Datta (U.S. 5,552,998).

Datta discloses monitoring performed over a temperature range of 20°C to 700°C. It would have been obvious to one of ordinary skill in the art, at the time the

invention was made to expand the upper limit of the temperature range to a greater temperature depending on the type of heating element that is being monitored. For example, a heating element in an oven would require a higher temperature limit than a heating element for a curling iron.

6. Claims 13, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta as applied to claim 1 above, and further in view of Barzilai et al. (U.S. 5,270,520).

For claim 13, Datta discloses the difference between the monitored characteristic and the reference baseline is caused by temperature and resistance, but not by elongation. However, Barzilai discloses the difference between the monitored characteristic and the reference baseline is caused by temperature, resistance, and elongation (col 2, Ins 49-53; col 4, Ins 12-16; Fig. 4, item 30). It would have been obvious to not only monitor the temperature and resistance, but monitored the expansion or elongation of an element so that safety mechanisms, such as switches can be included to shut off power upon a certain threshold of expansion.

For claim 15, Datta discloses the difference between the monitored characteristic and the reference baseline is caused by temperature and resistance, but not by a reduction in the cross-sectional area of the material. However, Barzilai discloses the difference between the monitored characteristic and the reference baseline caused by temperature, resistance, and a reduction in the cross-sectional area of the material (col 2, Ins 49-53; col 4, Ins 12-16; Fig. 4, item 30). Elongation of the wired heating element reduces the cross-sectional area of the material. It would have been obvious to not only

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monitor the temperature and resistance, but monitored the cross-sectional area of an element so that safety mechanisms, such as switches can be included to shut off power upon a certain diameter of cross-sectional area.

For claim 20, Datta does not disclose graphical representations of the monitored characteristics; however, Barzilai discloses a baseline reference and a monitored characteristic converted to a graphical representation (Figs. 10 and 14), but the comparison between the monitored characteristic and the reference baseline is temperature and resistance, not a geometric comparison. On the other hand, Barzilai does disclose that a geometric change occurs due to the temperature change of the heating element (col 4, lns 12 and 13); therefore, it would have been obvious to not only monitor the temperature and resistance, but monitored a geometric change so that safety mechanisms, such as switches can be included to shut off power upon a certain geometric change.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura as applied to claim 24 above, and further in view of Grasso (U.S. 4,518,850).

Yoshimura discloses a metal heating element comprised of iron alloy (col 1, lns 6-10), but does not include more than one metal alloy. Grasso, on the other hand, discloses a heating element coil to comprise iron, chromium, and aluminum (col 4, lns 29-32). Even though Grasso does not disclose specific percentages of each material, it would have been obvious to include specific percentages of desirable alloys in order to prolong the life of the heating element.

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura as applied to claim 24 above, and further in view of Barzilai et al. (U.S. 5,270,520).

Yoshimura discloses comparing performed as a resistance-temperature comparison, but does not compare geometrically. Barzilai, on the other hand, compares by resistance, temperature, and geometrically (Fig. 10; col 4, lns 12 and 13). Even though the structure of Barzilai and Yoshima differ, comparing the characteristics of heating elements remains consistent. Therefore, it would have been obvious to not only monitor the temperature and resistance, but also monitor a geometric change so that safety mechanisms, such as switches can be included to shut off power upon a certain geometric change.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Datta as applied to claim 1 above, and further in view of Grasso (U.S. 4,518,850).

Data discloses a wire-heating element comprised of an alloy, but does not include certain specific alloys. Grasso, on the other hand, discloses a heating element coil to comprise iron, chromium, and aluminum (col 4, lns 29-32). Even though Grasso does not disclose specific percentages of each material, it would have been obvious to include specific percentages of desirable alloys in order to prolong the life of the heating element.

Allowable Subject Matter

10. Claims 14, 16, 17, 19, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. Claims 29-38 are allowed.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Stone whose telephone number is (571) 272.2976. The examiner can normally be reached 8:00-4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Jeffery Hofsass can be reached at (571) 272.2981. The fax phone number for the organization where this application or proceeding is assigned is (703) 872.9306 for regular and after final communications.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272.2600.

Jennifer Stone
November 5, 2004



JEFFERY HOFSSASS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600